

Final Practice Test Math 0304

Solve each equation.

$$1) 1.5 + 2z = -3(0.2z + 2.1)$$

$$\begin{array}{rcl} 1.5 & + 2z & = -0.6z - 6.3 \\ -1.5 & & -1.5 \end{array}$$

$$\begin{array}{rcl} 2z & = & -0.6z - 7.8 \\ +0.6z & +0.6z & \end{array}$$

$$\begin{array}{rcl} 2.6z & = & -7.8 \\ \hline 2.6 & & 2.6 \end{array}$$

$$z = \boxed{-3}$$

$$2) 4(2x + 3) + x = 3(x - 3)$$

$$\begin{array}{rcl} 8x + 12 & + x & = 3x - 9 \end{array}$$

$$\begin{array}{rcl} 9x + 12 & = & 3x - 9 \\ -12 & & -12 \end{array}$$

$$\begin{array}{rcl} 9x & = & 3x - 21 \\ -3x & & -3x \end{array}$$

$$\begin{array}{rcl} 6x & = & -21 \div 3 \\ \hline 6 & & 6 \div 3 \end{array}$$

$$x = \boxed{-\frac{7}{2}}$$

$$3) \frac{1}{2}y - \frac{3}{10} = \frac{2}{10} - \frac{1}{2}y$$

$$\begin{array}{rcl} + \frac{3}{10} & + \frac{3}{10} & \end{array}$$

$$\begin{array}{rcl} \frac{1}{2}y & = & \frac{5}{10} - \frac{1}{2}y \\ + \frac{1}{2}y & & + \frac{1}{2}y \end{array}$$

$$\frac{1}{2}y + \frac{1}{2}y = \frac{5}{10}$$

$$1y = \frac{5 \div 5}{10 \div 5}$$

$$\boxed{y = \frac{1}{2}}$$

4) $3 \cdot (n - 7) = 2n - 1$ Let $n = \text{number}$

$$\begin{array}{rcl} 3n - 21 & = & 2n - 1 \\ + 21 & & + 21 \end{array}$$

$$\begin{array}{rcl} 3n & = & 2n + 20 \\ - 2n & & - 2n \end{array}$$

$$\boxed{n = 20}$$

5) $-4x + 14 < 7x - 30$

$$\begin{array}{rcl} -4x & & 7x - 30 \\ - 14 & & - 14 \end{array}$$

$$\begin{array}{rcl} -4x & < & 7x - 44 \\ - 7x & & - 7x \end{array}$$

$$\begin{array}{rcl} -11x & < & -44 \\ -11 & & -11 \end{array}$$

Inequality $\boxed{x > 4}$

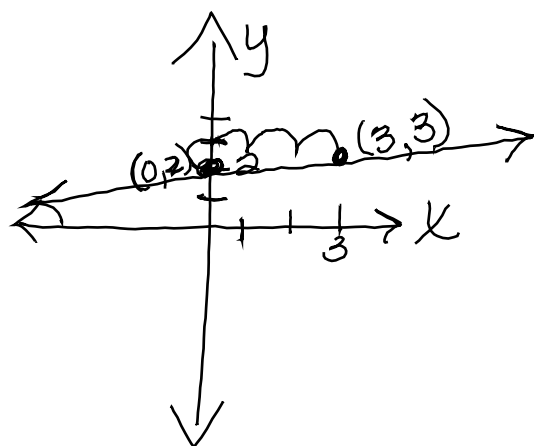
divide by neg reverse
Inequality Sign

Graph is 

Interval: $(4, \infty)$ ← always!

6) $y = \frac{1}{3}x + 2$

\uparrow $m = \frac{1}{3}$ \uparrow $b = 2 \rightarrow (0, 2)$
y intercept



7) (x_1, y_1) and (x_2, y_2)
 $(-1, 4)$ and $(3, -4)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-4 - 4}{3 - (-1)} = \frac{-8}{4} = \boxed{-2}$$

8) $m = \frac{3}{4} \rightarrow$ a) Parallel lines have equal slopes
 $\boxed{m = \frac{3}{4}}$

b) Perpendicular lines have slope that opposite reciprocal of each other.

$\boxed{m = -\frac{4}{3}}$

9) $2x - 4y = -8$

X-intercept
Step 1: Set $y = 0$
 $2x - 4(0) = -8$
Step 2: Solve for x .
 $2x = -8$

$$\frac{2x}{2} = \frac{-8}{2}$$

$$x = -4$$

Point $(-4, 0)$ X intercept.

Y-intercept
Step 1: Set $x = 0$
 $2(0) - 4y = -8$
Step 2: Solve for y .

$$\frac{-4y}{-4} = \frac{-8}{-4}$$

$$y = 2$$

Point $(0, 2)$ Y intercept

10) $m = -\frac{1}{4}$ y intercept is $(0, 3)$

$$y = mx + b$$

$$y = -\frac{1}{4}x + 3$$

add → collect like terms

11) $(10x^2 + 7x - 3) + (-4x^2 + 2x - 7)$

$$(10x^2 + 7x - 3) + (-4x^2 + 2x - 7)$$

$$6x^2 + 9x - 10$$

12) $(3x - 2)(x + 2)$ multiply → FOIL

$$3x^2 + 6x - 2x - 4$$

$$3x^2 + 4x - 4$$

13) $(7x + 1)^2 = (7x + 1)(7x + 1)$ FOIL

$$= 49x^2 + 7x + 7x + 1$$

$$= 49x^2 + 14x + 1$$

14) $\frac{x^2 - 1x - 6}{x + 2} = \frac{(x - 3)(x + 2)}{(x + 2)}$

$$= x - 3$$

$$15) \left(\frac{x^1}{y^3} \right)^{-2} = \frac{x^{1 \cdot -2}}{y^{3 \cdot -2}} = \frac{x^{-2}}{y^{-6}} = \boxed{\frac{y^6}{x^2}}$$

$$16) x^2 - 4x - 12 = \boxed{(x-6)(x+2)}$$

$\begin{array}{l} \nearrow \\ -6 \cdot 2 = -12 \\ -6 + 2 = -4 \end{array}$

$$17) 12x^2 + 17x + 6 = \boxed{(3x+2)(4x+3)}$$

$\begin{array}{cc} \nearrow & \nwarrow \\ 3 & 4 \end{array} \quad \begin{array}{cc} \nearrow & \nwarrow \\ 2 & 3 \end{array}$
 $\begin{array}{c} 8x \\ + 9x \\ \hline 17x \end{array}$

$$18) 5x^2 - 20 = 5(x^2 - 4) \quad 17x \checkmark$$

\uparrow difference of squares
 $\boxed{5(x+2)(x-2)}$

$$19) 4x^2 + 20x + 25 = (2x+5)(2x+5)$$

$\begin{array}{c} 10x \\ + 10x \\ \hline 20x \end{array} \checkmark$
 $\boxed{(2x+5)^2}$

$$20) 2x^3y^2 - 35x^2y^5 + 7xy^8$$

$\begin{array}{ccc} \nearrow & \nearrow & \nearrow \\ 2 & 35 & 7 \end{array} \quad \begin{array}{ccc} \nwarrow & \nwarrow & \nwarrow \\ 3 & 5 & 1 \end{array}$
 $\boxed{7xy(3y - 5xy^4 + y^7)}$

$$21) \frac{y^2 - 5y}{7y - 35} = \frac{y(y-5)}{7(y-5)} = \boxed{\frac{y}{7}}$$

Be careful!

22 $\frac{(y-4)^2}{y+3} \div \frac{y^2-4y}{5y^2}$

KFC

$\frac{(y-4)(y-4)}{(y+3)} \cdot \frac{5y(y)}{y(y-4)}$

$$\frac{5y(y-4)}{(y+3)}$$

23 Subtract: $\frac{(x-1)(x-1)}{(x+3)(x-1)} - \frac{x^2-5}{(x+3)(x-1)}$

Same denom.

Be careful

$$= \frac{(x-1)(x-1) - (x^2-5)}{(x+3)(x-1)}$$

$$= \frac{x^2 - 1x - 1x + 1 - x^2 + 5}{(x+3)(x-1)}$$

$$= \frac{-2x + 6}{(x+3)(x-1)}$$

$$= \frac{-2(x-3)}{(x+3)(x-1)}$$

Final answer

(24) Solve: Find the Value of Variable

$$\frac{4y}{(y-4)} + \frac{5}{1} = \frac{5y}{(y-4)}$$

Step 1: Find LCD = $(y-4)$

Step 2: Multiply each term on both sides of equation by LCD = $y-4$

$$\frac{(y-4)}{1} \cdot \frac{4y}{(y-4)} + \frac{5 \cdot (y-4)}{1} = \frac{5y}{(y-4)} \cdot (y-4)$$

$$4y + 5y - 20 = 5y$$

$$9y - 20 = 5y$$

$$+20 \quad +20$$

$$9y = 5y + 20$$

$$-5y \quad -5y$$

$$\frac{4y}{4} = \frac{20}{4}$$

$$\boxed{y = 5} \checkmark$$

(25) Mr. Crook - 3 days
Son - 4 ~~days~~ days

X = number of days

$$\frac{1}{3} \cdot X + \frac{1}{4} \cdot X = 1 \leftarrow \text{one job}$$

$$12 \cdot \frac{X}{3} + \frac{X}{4} \cdot 12 = 1 \cdot 12$$

① LCD = 12

② Multiply by LCD = 12

$$4X + 3X = 12$$

$$\frac{7X}{7} = \frac{12}{7} = \boxed{1 \frac{5}{7} \text{ days}}$$